SECTION VII.—WEATHER AND DATA FOR THE MONTH.

WEATHER OF OCTOBER, 1918.

P. C. DAY, Climatologist and Chief of Division.

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PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds for October, 1918, are graphically shown on Chart VII, while the means at the several stations, with the departures from the normal, are shown in Tables I and III.

For October, as a whole, the average pressure was below the normal in the Gulf States and northward to the lower Missouri and central Mississippi valleys, in the northwestern Canadian Provinces, and the extreme southern portions of California and Arizona. Elsewhere it was generally above the seasonal average. The departures from the normal were everywhere small, the greatest being 0.10 inch in the extreme eastern Canadian Provinces. (A more detailed discussion of the pressure distribution during October will be found under "Forecasts and warnings.")

The general distribution of atmospheric pressure for the month favored southerly winds in most northern and central portions of the country, while in the southeastern districts they were generally northerly. Elsewhere variable winds prevailed.

TEMPERATURE.

The month opened with cool weather in the Ohio Valley and to the northward, with frost in the Lakes region and the interior of New York and Pennsylvania, and toward the middle of the first decade freezing weather was experienced in portions of North Dakota and Minnesota, and during the next few days it occurred locally in New York and New England. Elsewhere throughout much of the decade the temperature was above the normal, particularly over the central and southern Great Plains and part of the lower Mississippi Valley, where it averaged about 6° a day above the normal. During the remainder of the first half of the month seasonable temperatures prevailed generally and similar conditions existed during the last half of the month, with no unusual fluctuations except that in southwestern California the temperature near the end of the month was decidedly above the seasonal average.

For the month as a whole the temperature average was above the normal in all sections. In portions of the Northeast and Northwest, the excess was about one degree a day, while in portions of the South and the Great Plains States, and the far Southwest the excess was about 6° a day.

PRECIPITATION.

During the first decade rather frequent and heavy rainfall occurred in many localities from the Lakes region to the Atlantic coast; elsewhere east of the Rocky Mountains the falls were mostly unimportant. However, near the close of the decade heavy local rains fell in the central Gulf coast States and the Southern Great Plains region. West of the Rocky Mountains rain set in over the central and northern portions early in the month and continued for several days, relieving the severe drouth that had prevailed in that section, but causing damage to fruit in the process of drying in California. At the beginning of the second decade showery weather prevailed in the Mississippi Valley, and during the next several days the rain area extended over practically all districts east of the Mississippi River. During the latter part of the decade showery weather continued for several days, with some torrential local rains in the lower Mississippi Valley. Rain also fell in the central and northern plateau and Pacific Coast States and at the close of the decade rainfall was general and at a number of points heavy in practically all districts east of the Rocky Mountains. Early in the third decade rains again set in over the Great Plains region and during the following few days unsettled, showery weather prevailed in the Gulf region and interior valleys, with heavy falls in northern Texas, the central Gulf States, and the southern Appalachian region, nearly 6 inches having fallen at Asheville, N. C., in the 24 hours ending with the morning observation of the 25th. Toward the latter part of the decade unsettled, showery weather prevailed for several days from the Gulf northward to the Hudson Bay region and to the eastward, with heavy falls in the Southern States. The month closed with fair weather throughout the central and western districts, except along the north Pacific coast, where light rain prevailed.

For the month as a whole the precipitation was exceptionally heavy in the southern portion of the Appalachian Mountain region and thence southwestward to the Gulf; it was also fairly heavy in western Iowa, eastern Nebraska, over the greater portions of Kansas and Oklahoma, and along the north Pacific coast. In the Atlantic States the amounts were generally light, and but little precipitation occurred in the mountain and plateau States and over the greater part of California and the far Southwest. In the principal agricultural districts the ground was well supplied with moisture at the close of the month, except in the Atlantic Coast States and from the Dakotas westward to the Rocky Mountains and in parts of the far Southwest.

RELATIVE HUMIDITY.

The relative humidity for the month was above the normal throughout the whole country, except locally along the Pacific coast and in portions of the upper Lakes region and westward to the Dakotas, where there were slight deficiencies.

GENERAL SUMMARY.

For October as a whole the weather was favorable for nearly all farming operations. The gathering of corn progressed satisfactorily, although this work was retarded somewhat by rain during the latter part of the month in

southern districts and some damage resulted. The crop was mostly matured before frost and the quality was generally good. The prevailing high temperature was very favorable for the development of the late bolls and the top growth of cotton, especially in the central and eastern portions of the belt; and, while rainy weather caused some delay in picking and ginning, this work made excellent progress. The weather was expecially favorable for winter grains, and the condition of these crops was generally excellent; also the area planted was larger than usual in the Central Valley States. Potato digging made satisfactory progress, and the moderate weather was favorable for the growth of late garden truck in most Southern States. The harvesting of sugar beets progressed favorably and, while sugar cane was backward, the prospect for this crop was generally good. The weather was favorable for pastures, and live stock was in good condition. Citrus fruits in Florida and California progressed satisfactorily and the weather was generally favorable for the maturing and harvesting of other fruits.

Average accumulated departures for October, 1918.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	Ins.	Ins.	Ins.	0–10.		P. ct.	
New England	52.6	+2.3	− 8.4	2.31	−1.30	− 4.20	6.0	+0.6	81	+3
Middle Atlantic	59.0	+3.4	− 0.7	1.72	−1.50	− 5.50	5.2	+0.5	75	−1
South Atlantic	67.6	+3.9	+ 5.5	2.70	−1.20	−13.40	6.3	+2.3	80	+3
Florida Peninsula	78.9	+2.2	+ 5.5	5.21	−1.00	−16.00	6.2	+1.6	80	+1
East Gulf	70.3	+4.8	+ 9.1	8.29	+5.50	+ 1.00	6.7	+2.9	81	+8
West Gulf	69.3	+2.7	+ 7.9	3.69	+0.90	− 8.10	5.4	+1.7	68	−4
Ohio Valley and Tennessee	60.7	+3.8	− 1.7	3.32	+0.80	− 3.10	6.0	+1.6	74	+2
Lower Lakes	54.0	+2.2	− 7.5	2.97	0.00	− 1.40	6.0	+0.2	75	+1
Upper Lakes	50.6	+2.9	− 8.4	3.17	+0.40	− 3.00	6.3	+0.3	79	+1
North Dakota	46.6	+4.0	+11.0	0.68	−0.60	− 3.70	5.1	−0.1	69	+3
Upper Mississippi Valley	56.1	+3.3	+ 0.7	2.77	+0.30	− 2.00	5.8	+1.3	74	+1
Missouri Valley	57.0	+4.4	+14.6	2.82	+0.90	− 3.80	5.1	+1.0	70	+4
Northern slope	49.4	+4.8	+ 9.1	0.86	−0.10	+ 1.30	5.2	+0.9	68	+1
Middle slope	59.4	+3.8	+10.9	3.00	+1.50	+ 0.30	5.4	+1.9	69	+8
Southern slope	64.6	+2.3	+13.6	3.04	+0.50	− 6.60	3.9	+0.2	65	+1
Southern Plateau	61.7	+1.9	+ 1.6	1.00	+0.40	− 0.20	2.7	+0.5	52	+8
Middle Plateau	53.6	+2.8	+ 5.6	0.74	−0.10	− 0.50	4.2	+0.9	59	+9
Northern Plateau	53.3	+3.9	+17.5	1.52	+0.30	− 1.00	5.7	+1.1	67	+6
North Pacific	54.1	+2.4	+13.1	4.51	+0.70	− 3.70	7.1	+0.7	85	+2
Middle Pacific	61.1	+2.4	+ 6.2	0.45	−1.10	− 4.20	3.8	−0.2	69	+2
South Pacific	68.4	+6.0	+22.5	0.34	−0.50	+ 2.30	3.0	−0.1	64	−3

WEATHER CONDITIONS OVER THE NORTH ATLANTIC DURING OCTOBER, 1917.

The data presented are for October, 1917, and comparison and study of the same should be in connection with those appearing in the Review for that month.

Chart IX (XLVI–91) shows the averages of pressure, air temperature, water-surface temperature, and the prevailing direction of the wind at 7 a. m., 75th meridian time (Greenwich mean noon).

Notes on the location and courses of the more severe storms of the mouth are included in the following general summary.

PRESSURE.

The distribution of the mean atmospheric pressure for the month differed considerably from the normal in some respects. The North Atlantic HIGH, with a crest of 30.3 inches, was practically normal in position but of greater intensity than usual. The Icelandic LOW of 29.4 inches was well developed and considerably below the normal in intensity, the gradient between the two areas being remarkably steep. The pressure over the western division of the ocean was near the normal in the southern section and slightly above in the northern.

The following table gives for a number of selected 5-degree squares the average pressure for each of the three decades of the month, as well as the highest and lowest individual readings reported during the month within the respective squares.

Pressure over the North Atlantic Ocean during October, 1917, by 5-degree squares.

Position of 5-degree squares.		Decade means.			Extremes.			
					Highest.		Lowest.	
Latitude.	Longitude.	I.	II.	III.*	Pressure.	Date.	Pressure.	Date.
°	°	Inches.	Inches.	Inches.	Inches.	October.	Inches.	October.
60–65 N	20–25 W	29.55	29.77	29.70	30.22	13	29.18	24
60–65 N	0– 5 E	29.39	29.61	29.25	30.04	19	28.73	25
55–60 N	35–40 W	29.82	29.88	30.00	30.32	9,13	29.38	2
55–60 N	10–15 W	29.57	29.63	29.51	29.92	5	29.09	24
50–55 N	55–60 W	29.94	29.97	30.05	30.50	24	29.47	5
50–55 N	25–30 W	30.02	29.92	29.99	30.39	13	29.52	30
50–55 N	0– 5 W	29.68	29.75	29.72	30.20	20	29.07	13
45–50 N	65–70 W	30.01	30.03	30.04	30.48	24	29.50	1
45–50 N	40–45 W	30.22	30.11	30.21	30.52	4	29.70	30
45–50 N	10–15 W	30.08	29.99	30.01	30.39	5	29.70	13,30
40–45 N	50–55 W	30.21	30.20	30.18	30.47	3	29.80	1
40–45 N	25–30 W	30.36	30.24	30.27	30.60	5,21	29.80	31
35–40 N	75–80 W	30.11	30.11	30.08	30.30	2	29.60	30
35–40 N	35–40 W	30.39	30.31	30.23	30.60	5	30.00	31
35–40 N	10–15 W	30.17	30.18	30.16	30.37	6	30.03	27
30–35 N	50–55 W	30.22	30.20	30.09	30.36	5	29.98	28
30–35 N	25–30 W	30.30	30.26	30.21	30.50	11	30.06	19
25–30 N	90–95 W	30.07	30.00	30.05	30.21	23	29.80	25
25–30 N	60–65 W	30.07	30.10	30.07	30.20	18,30	29.96	1,25
25–30 N	15–20 W	30.10	30.15	30.10	30.30	11	29.99	25
20–25 N	75–80 W	29.99	29.97	29.97	30.25	7	29.91	20,24
20–25 N	50–55 W	30.07	30.05	30.00	30.20	6	29.95	25
15–20 N	35–40 W	30.02	30.01	29.98	30.11	4,6	29.93	21
10–15 N	80–85 W	29.88	29.86	29.85	29.92	2	29.80	22

* Mean of last 11 days of the month.

The mean values presented in the above table are based on the interpolated daily pressure for each square on the daily synoptic charts of the North Atlantic, compiled by the marine section of the Weather Bureau. The extremes are the highest and lowest actual readings observed within the respective squares.

GALES.

There were fewer gales than usual over the entire ocean, with the exception of a limited area in the eastern part of the steamer lanes, where the number of days on which they were observed was slightly above the normal.

On October 3 a LOW of 29.13 inches was central in the vicinity of the Shetland Islands, and a vessel about 250 miles east of that point encountered a westerly gale of over 60 miles an hour. On the same day a HIGH with a crest of 30.54 inches was off the Canadian coast, and moderate gales were reported by a few vessels between the two areas.

On the 4th this LOW surrounded the coast of the Scandinavian peninsula, the barometer at Christiansund,

Norway, reading 28.93 inches, with strong northerly gales between there and Iceland. On the same day a LOW of less intensity (I on Chart IX) was central near Quebec, while moderate winds prevailed along the Canadian coast. LOW I moved northeastward with a fair rate of speed, and on the 5th covered the east coast of Labrador; it had increased somewhat in intensity, as moderate southerly and southeasterly gales were reported from the easterly quadrants, while fog occurred off the Banks of Newfoundland. LOW I increased in its rate of translation, and on the 6th the center was near latitude 48°, longitude 30°, the wind and weather conditions remaining about the same as on the previous day. On the 7th the center of this disturbance was near latitude 60°, longitude 15°; it had increased considerably in intensity, and strong northwesterly gales were encountered in the westerly quadrants. This LOW remained practically stationary during the next 48 hours, although the storm area had increased in extent, and on the 8th and 9th winds of gale force swept over a large territory between the European coast and the 40th meridian.

On the 12th a well-developed LOW of 28.96 inches surrounded the north coast of Scotland, and heavy gales prevailed between the 45th and 62d parallels, and the European coast and the 25th meridian. This LOW moved eastward and on the 13th covered the North Sea, remaining about the same in intensity, with a minimum barometric reading of 28.95 inches. Gales still swept the European coast, although they did not extend as far west as on the 12th.

From the 13th to the 18th there were a number of shallow depressions over various parts of the ocean, and light to moderate winds prevailed during that period. On the 19th a moderate LOW was central near latitude 57°, longitude 23°, and southerly gales occurred in the easterly quadrants. On the same day a HIGH with a crest of 30.54 inches surrounded the Canadian coast, and vessels a short distance east of the Banks of Newfoundland reported northerly winds of gale force, where the barometer reading was over 30.2 inches. By the 20th the LOW had moved about 15° toward the east, and southerly gales occurred off the European coast. The HIGH had drifted slowly southward and the winds over the western division of the ocean were from light to moderate.

On the 22d the North Atlantic HIGH had become unusually well developed, with a crest of 30.62 inches, and vessels near the Azores, about 300 miles south of the crest, reported northeasterly gales of from 40 to 50 miles an hour, while the barometer readings ranged from 30.40 to 30.50 inches, at the same time there was a LOW of marked intensity off the Scandinavian coast, but on account of lack of reports no information is available as to weather conditions. On the 23d the positions of both the high and low areas were nearly the same as on the previous day, and winds of gale force still prevailed over the azores, although of somewhat diminished force.

On the 24th, Norfolk, Va., was the center of a LOW of 29.60 inches, and moderate northwesterly gales were encountered off the coast between Hatteras and Savannah. On the same day a disturbance covered the territory between Iceland and the Shetland Islands, and southwesterly gales with hail were reported from the southern quadrants. On the 25th, the American LOW, having moved northward, was central near Montreal, and a few reports were received from vessels off the coast between Halifax and New York, that denoted winds of gale force. The European LOW had moved rapidly eastward, increasing in intensity, and on the 25th it was central near Skudesnaes, Norway, where the barometer reading was 28.63 inches, the lowest reported during the month. Violent gales, with hail, swept a large territory between the 25th meridian and the European coast, the storm area extending as far south as the 45th parallel. On the 26th the Canadian LOW had begun to fill in, and the Scandinavian disturbance, while remaining nearly stationary in position, had decreased slightly in intensity, although heavy winds with hail were still encountered north of the 55th parallel, and east of the 20th meridian. On the 27th this LOW was in practically the same region as on the previous day, and heavy weather still prevailed in the vicinity of the Shetland Islands and adjacent territory. This depression covered a large area between the 20th meridian and the Scandinavian peninsula until the end of the month, although few reports of heavy winds were received from vessels within these limits.

From the 28th to the 31st there was a LOW over eastern Canada, and winds of gale force occurred during that period between the 40th meridian and the American coast.

AIR TEMPERATURE.

The average temperature of the air over the greater part of the North Atlantic ocean was below the normal. Negative departures of from 4° to 5° were the rule over the eastern division, north of the 40th parallel, while between the Madeiras and the Azores, the departures were slightly less. In the waters adjacent to the Canadian and New England coasts, as well as in the North East trade wind limits, the temperatures were from 2° to 3° above the normal, and in the Caribbean Sea and Gulf of Mexico the departures were practically zero.

The seasonal fall in temperature during the month was comparatively small, as were the daily fluctuations. In the square that includes the east coast of Labrador, where the greatest changes usually occur, the range was only 8°, from 41° on the 31st to 49° on a number of different days.

The following table gives the temperature departures for the month at a number of Canadian and United States Weather Bureau stations on the Atlantic and Gulf coast:

	°F.		°F.
St. Johns, N. F.	+4.4	Norfolk, Va.	−3.1
Sydney, C. B. I.	+4.4	Hatteras, N. C.	−2.8
Halifax, N. S.	+3.0	Charleston, S. C.	−3.4
Eastport, Me.	−0.4	Key West, Fla.	+0.7
Portland, Me.	−2.1	Tampa, Fla.	0.0
Boston, Mass.	−0.4	Mobile, Ala.	−3.4
Nantucket, Mass.	−1.9	New Orleans, La.	−3.1
Block Island, R. I.	−3.6	Galveston, Tex.	−3.8
New York, N. Y.	−3.6	Corpus Christi, Tex.	−2.4

WATER SURFACE TEMPERATURE.

In the waters adjacent to the American coast the departures from the normal of the average monthly water surface temperature did not differ materially from that of the air. Off the Banks of Newfoundland the departures were irregular, ranging from +3° to −3°, and along the American coast from +2° in the south to −2° in the north. In the western division of the ocean, between the 30th and 45th parallels, as well as in the Gulf of Mexico, the water temperatures were as a rule from 1° to 4° below the normal. In the region of the Azores the departures were slightly positive, and throughout the northeast trade wind region they varied from −1° to +2°.

The greatest daily fluctuation in the water temperature occurred as usual in the square between latitude

45°–50°, longitude 45°–50°, where the range was from 48° to 59°, both extremes occurring on a number of different days.

FOG.

Fog was unusually rare during the month, the greatest amount occurring in the square between latitude 45°–50°, longitude 45°–50°, where it was observed on five days, a percentage of 16, while the normal for that square is 30 per cent or more. Fog was reported on one day off the North Carolina coast, and also in the Azores, while the steamer lanes were apparently entirely free from it, although so few vessels reports were received over the eastern section, that it was impossible to determine the conditions accurately.

HAIL AND SNOW.

The greatest amount of hail occurred in the square between latitude 55°–60°, longitude 25°–30°, where it was reported on three days, while it was encountered on two days in each of the two squares immediately to the eastward.

Only one report of snow was received during the month; it was observed on the 5th in the square between latitude 55°–60°, longitude 15°–20°.

Winds of 50 mis./hr. (22. 4 m./sec.) or over, during October, 1918.

Station.	Date.	Velocity.	Direction.	Station.	Date.	Velocity.	Direction.
Buffalo, N. Y.	5	54	sw.	North Head, Wash.	* 27	68	s.
Do.	13	54	sw.	Pensacola, Fla.	23	53	se.
Duluth, Minn.	12	65	w.	Do.	27	50	s.
Mount Tamalpais, Cal.	14	50	s.	St. Louis, Mo.	27	66	sw.
North Head, Wash.	4	72	se.	Tatoosh Island, Wash.	10	68	s.
Do.	9	56	se.	Do.	11	62	s.
Do.	26	52	se.	Do.	27	68	s.